ratio before ion exchange between 20 and 500, and is ion-exchanged with Co to have a Co/Al ratio between 0.2 and 0.6.

In claim 2, line 1, change "Claim 1" to --claim 15--.

In claim 2, line 2, change "the average diameter of" to -- an average diameter for--.

In claim 3, line 1, change "Claim 1" to --claim 15--.

In claim 6, line 2, insert --is-- after "Al".

In claim 10, line 1, change "Claim 9" to --claim 16--.

In claim 10, line 3, change "being" to --which is--.

In claim 11, line 1, change "Claim 9" to --claim 16--.

In the Abstract

At the end of the last line of the Abstract, please insert the following:

The channels are arranged as a plurality of straight channels having a sectional sizes of oxygen 8-ring or larger. The channels form a structure oriented in at least two different dimensional directions. Individual straight channel members communicate with each other by means of micropores having a size of oxygen 8-ring or larger. The channels oriented in at least one of the directions has a size in section of oxygen 10-ring or larger.

Remarks

Favorable reconsideration of this application is requested in view of the above amendments and following remarks. Claims 2 through 8, 10-12 and 15-18 are pending in the application. New claims 15-18 reflect original claims 1, 9, 13 and 14 respectively, rewritten with editorial corrections.

The specification was found objectionable. Several of the objections have been addressed through the above amendments. However, Applicants respectfully traverse several of the issues.

Applicants respectfully submit that those of ordinary skill in this art would have no difficulty understanding the phrase "straight channels of oxygen 8-ring or larger section, directed in at least 2 different dimensional directions". With respect to the structure of at least two dimensions, Applicants respectfully submit that, when taken in context, one skilled in the art would be readily understand that the reference is made to the channel structure as a whole, not individual channels. In this regard, note the accompanying pages 53-67 of Breck, "Zeolite Molecular Sieves", originally published 1973 and reprinted in 1984. Note in particular the discussion of the 2-dimensional levynite structure at page 61. The structure is illustrated schematically at page 63 in Figure 2.29(d).

With respect to "oxygen 8-ring", Applicants again submit that those skilled in the art would readily understand this term. As seen at page 63 of Zeolite Molecular Sieves, ring structures of metallosilicates usually are specified by the number of T-site atoms rather than the total number of atoms of constituting the ring. In view of the nature of the present materials, one of ordinary skill would readily understand the reference to oxygen in the term "oxygen 8-ring" as being directed to the non-T-site atoms. Thus, the term is easily understood by those skill in the art. See also line 3 from the end of page 64 of Zeolite Molecular Sieves.

With respect to the term "communicating", Applicants respectfully submit that this term also would be easily understood by those skill in the art. That is, when considered in context, those skill in the art would have not difficulty understanding that communication of channels with each other through openings of a specified size permits gas molecules to move from one channel to another. This permits gas diffusion even when a particular channel becomes partially blocked, for example due to poisoning by water vapor or sulfur oxides. Therefore, Applicants believe that the concept of zeolite channels "communicating" is easily understood and that no additional clarification is needed.

Claims 1 and 9 have been rejected for lack of enablement. This rejection is respectfully traversed. The rejection is based on the requirement in claims 1 and 9 of "straight channels of oxygen 8-ring or larger section oriented in at least two different dimensional directions". Applicants respectfully contend that this terminology is readily understood for the reasons

discussed above. Furthermore, the present specification fully explains how to obtain such products and provides working examples. Therefore, the rejection should be withdrawn.

Claims 1-14 have been rejected for indefiniteness. Editorial revisions have been made in the claims in response to the issues raised in this rejection. To the extent any of the issues have not been addressed by the amendments, it is believed that the points discussed above are relevant and the issues should be withdrawn.

Claims 1-14 have been rejected as unpatentable over Li in view of Dessau. This rejection is respectfully traversed.

The present invention is directed to zeolite materials having a particular pore structure and exhaust gas treatment methods making use of such materials. By providing materials having the present pore structures, the present invention maintains efficient nitrogen oxide conversion for long periods, even in the presence of water vapor and sulfur oxides. Note in particular examples 10-13, with associated comparative examples, reported at pages 24-29 of the specification. Note in particular example 13, which shows that the catalyst of the present invention enjoyed at least 60% nitrogen oxide conversion for 1500 hours when treating an exhaust gas containing 0.4 ppm sulfur dioxide and 13% water vapor.

Li does not suggest preparation of the catalyst that can function consistently in the presence of water vapor. This feature is very important to the practical application of a zeolite structure for nitrogen oxide conversion, since the exhaust gas of a petroleum fuel or natural gas fuel generally contains water vapor in an amount of about 5-15%. In addition, sulfur oxides may be present in the exhaust gas in the amounts from about 0.1 to 100 ppm, depending on the quality of the fuel.

The Li patent discloses certain catalysts, but only reports testing of those catalyst in the absence of water vapor. In fact, two of the inventors of this patent later reported that their catalysts suffer from a sharp decrease in nitrogen oxide reduction activity in the presence of water vapor and sulfur oxides. See the attached Catalysis B: Environmental, vol. 5, page L257-L270 (1995). In addition, the inventor Armor later reported the deleterious effect of water vapor for the Co-ZCM-5 catalyst. See the attached Catalysis Today, vol. 26, page 147-158 (1995).

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Note that the conversion of nitrogen oxide reduced from 65% to 30% in the presence of 2.5% water vapor, and further decreased to 15% in the presence of 7.3% water vapor. The presence of sulfur oxide would be expected to further harm of performance of these catalyst.

In view of the results reported by the inventors of the reference themselves, further considered in view of the comparative showings of the present specification, it is clear that the present catalysts are significantly difference from those of the reference, and the catalysts of Li reference in fact fail to suggest the catalysts presently claimed.

Dessau is cited as suggesting that aluminum could be replaced partially with boron and silicon with titanium. Even if this is accepted as correct for the sake of argument, Dessau does not remedy the deficiencies of Li discussed above. In addition, the results in example 9 on page 23 of the present specification shows that such substitution provides higher nitrogen oxide conversion at low temperature. Nothing in any of the art of record suggests that this effect could be achieved and therefore this aspect of the present invention provides results that could not be expected from the prior art. Therefore this aspect of the present invention is further distinguishable from the references.

In view of the above, favorable reconsideration in the form of a Notice of Allowance is requested.

Respectfully submitted,

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